



***Department of the Navy
Suicide Incident Report (DONSIR):
Summary of 1999–2004 Findings***

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14. ABSTRACT The Department of the Navy Suicide Incident Report (DONSIR) collects data on completed suicides in the Navy (USN) and Marine Corps (USMC). In this sixth annual report on the DONSIR, numbers conform to new DoD-wide guidelines regarding what suicide deaths should be included in active duty suicide rates and how those rates should be calculated. Between 1999 and 2004, 414 active-duty personnel within the DON (250 USN and 164 USMC) committed suicide. Most DON decedents were male, and suicide rates were significantly higher among men. The suicide rate was significantly lower for officers than for enlisted DON personnel. Suicide rates did not significantly differ, however, as a function of age, race, length of service, or enlisted paygrade. Suicides generally occurred while the decedent was on liberty and at a private residence. A firearm was the most commonly used method of committing suicide. Although the vast majority of deaths by firearm involved a private weapon, persons who had some military training with or access to a firearm were more likely than those who did not to use a gun to commit suicide. The general findings of this report echo previous annual DONSIR reports, reflecting stable results over time.					
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**Department of the Navy Suicide
Incident Report (DONSIR):
Summary of 1999–2004 Findings**

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SUMMARY

Problem: The Department of the Navy Suicide Incident Report (DONSIR) collects data on completed suicides in the Navy (USN) and Marine Corps (USMC). It provides the Department of the Navy (DON) with longitudinal data that can be compared across both services, and establishes baselines for suicide rates and suicide event characteristics that can be used to track trends over time. It also evaluates military-specific correlates of suicide that are not addressed in the civilian academic literature.

Objective: This is the sixth annual report for the DON suicide surveillance program. The goal of this report is to summarize results and conclusions based on the DONSIR data covering the period 1999 through 2004.

Approach: Completion of the DONSIR is a DON requirement for every completed suicide by an active-duty member (Navy Personnel Command, 2002; U.S. Marine Corps, 2001). The Suicide Prevention Program Manager for each service forwards service-specific instructions and an electronic copy of the DONSIR to each decedent's command. Commands are to assign a point of contact to complete the report and return it within 4 weeks of receipt.

Results: Between 1999 and 2004, there were 250 completed suicides among active-duty USN personnel and 164 among active-duty USMC personnel. The USN crude suicide rate was significantly lower than the USMC crude rate ($p < .01$), and both standardized rates were significantly lower than the U.S. civilian suicide rate ($p < .01$).

Decedent Demographic Profile

- Suicide rates were significantly higher ($p < .001$) among men than among women within the USN, but not within the USMC, where the observed count was insufficient for statistical reliability.
- There were no significant differences in crude suicide rates in either service for age group or race/ethnic group.

Decedent Career Profile

- The crude suicide rate was significantly lower ($p < .01$) for officers than for enlisted personnel in the DON overall, but not in the USN and USMC considered separately.
- There were no differences in crude suicide rates by length of service or enlisted paygrade in either service.

Suicide Event Characteristics

- USN decedents were more likely than USMC decedents to be assigned to a ship or submarine at time of death. However, this difference is because ships and submarines are not permanent duty stations for USMC personnel.
- The modal group committed suicide at a private residence while the individual was on liberty.
- The most common method of suicide was the use of a firearm. Firearms and hanging accounted for over three quarters of DON suicides.
- Decedents who were on government property at the time of suicide were more likely than were persons who died on civilian property to choose hanging as a suicide method.

Risk Factors for Suicide

- There were no significant ($p < .01$) differences by service in the total number of key suicide risk factors or of recent associated stressors reported for decedents.
- The key risk factors most commonly noted were recent depression, psychiatric treatment history, recent anxiety, feelings of guilt or shame, and alcohol abuse in the previous year.
- The most commonly noted associated stressors were problems in a primary romantic relationship, physical health problems, work issues (such as poor performance), recent military legal or administrative action, and job dissatisfaction.
- Multiple key risk factors and associated stressors were common among decedents. As much as 29% of decedents had evidence of 10 or more risks factors and stressors.

Recent Service Use

- USMC and USN decedents did not differ in the number of support services accessed.
- For most decedents (71%) there was no evidence of support service use in the 30 days prior to suicide.
- The most common types of service used in the 30 days prior to suicide were outpatient medical care, mental health counseling, and the chaplain service.

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INTRODUCTION

The Department of the Navy Suicide Incident Report (DONSIR) supports the first official suicide surveillance program within the Department of the Navy (DON). Since 1999, data on all completed suicides in the Navy (USN) and Marine Corps (USMC) are systematically collected (Hourani & Hilton, 1999; Hourani, Hilton, Kennedy, & Jones, 2000; Hourani, Hilton, Kennedy, & Robbins, 2001; Jones et al., 2001; Stander, Hilton, Doran, Gaskin, & Thomsen, 2005; Stander, Hilton, Kennedy, & Gaskin, 2004; Stander, Hilton, Kennedy, & Robbins, 2004). The DONSIR establishes baselines for suicide rates and suicide event characteristics that can be used to track trends over time. It evaluates military-specific correlates of suicide that are not addressed in the civilian academic literature.

The DONSIR's focus on military-specific risk factors is important because military personnel are not representative of the U.S. population. Differences in gender, race, age, health, and employment may result in unique correlates of suicide for active-duty personnel. The long-term goals of this program are (1) to provide military leadership and public affairs personnel with accurate and detailed information regarding suicide trends within the DON, and (2) to improve suicide prevention by identifying military-specific risk factors for suicide. The DONSIR provides the DON with longitudinal data that can be compared across both the USN and the USMC. This report also conforms to new guidelines established by the Department of Defense (DoD) Office of Health Affairs regarding how active duty suicides should be counted and how suicide rates should be calculated so that statistics can be compared more meaningfully across all of the U.S. military services.

METHODS

Instrument

The DONSIR is divided into sections covering information about the (1) point of contact (POC) assigned to complete the report, (2) demographic characteristics of the decedent and the circumstances of the suicide event, (3) military service history of the decedent, (4) health and medical history of the decedent, (5) risk factors for suicide evident within the year prior to the suicide event, and (6) recent use of support services by the decedent. It also includes sections for (7) narrative accounts of interviews with the decedent's military associates, (8) a narrative summary by the POC regarding the circumstances surrounding the suicide event, and (9) POC feedback regarding the process of completing the DONSIR (Hourani & Hilton, 1999; Hourani et

al., 2000; Hourani et al., 2001). The questions in the first six sections are primarily quantitative. The final three sections are more open-ended, so that relevant stressors and chronological events preceding the suicide can be summarized in narrative form. Information from these narratives is used to clarify responses to quantitative items and to inform revisions to the DONSIR.

Procedure

Completion of the DONSIR is both a USN and a USMC requirement in the event of any completed suicide by an active-duty member (Navy Personnel Command, 2002; U.S. Marine Corps, 2001). In the event of a suicide, the Suicide Prevention Program Manager for each service forwards service-specific instructions and an electronic copy of the DONSIR to each decedent's command. The command is to assign a POC within 3 days of the Report of Casualty (USMC) or within 3 days of receipt of the DONSIR (USN). POCs are directed to complete the report within 4 weeks and are encouraged to consult Program Managers with any questions or concerns during the process of filling out the DONSIR. POCs return the completed form to their Program Manager and to Naval Health Research Center.

The primary sources for completing the DONSIR are decedents' military service and medical records (Hourani & Hilton, 1999; Hourani et al., 2000; Hourani et al., 2001; Stander, Hilton, Kennedy, & Gaskin, 2004). Recommended additional sources that are sometimes available include counseling records, autopsy reports, toxicology reports, investigative reports, and interviews with military personnel who were the decedents' recent associates or who participated in the casualty management process (e.g., Casualty Assistance Calls Officers). POCs are instructed not to contact the decedent's civilian family members or friends. They are encouraged to use the best military sources available within the 4-week time frame.

Recently, a DoD working group, under the direction of Health Affairs, instituted new guidelines that all of the services have agreed to follow regarding what military status categories should be included as "active duty" and what methods should be used in calculating annual suicide rates. Total active-duty suicide counts now include the following Regular and Reserve component personnel with a cause of death officially confirmed as suicide by the Armed Forces Medical Examiner (AFME):

1. All Regular component service members except deserters. (This includes personnel on appellate leave.)
2. Reserve commissioned officers and cadets/midshipmen at military academies.

3. Regular component personnel whose suicide-related death occurs while on the temporary or permanent disability retired list (TDRL/PDRL) for 120 days or less. (This would include those placed on the TDRL while comatose from the suicide act.)
4. All personnel in the Active Guard Reserve (full-time support) and all activated Guard and Reservists.
5. All Guard and Reserve members who commit suicide en route to or during (a) Initial Active-Duty Training (boot camp and entry-level training), (b) 2-week Annual Training, or (c) weekend Inactive Duty Training.

These new guidelines will minimally affect the way the Navy and Marine Corps track suicide deaths. Most of the categories of active-duty persons listed above were already included in DON rates. Furthermore, some cases were previously included that were equivocal or undetermined but strongly suspected to be suicide deaths by civilian or local authorities. Equivocal events such as these that do not have an official AFME ruling of suicide are no longer included.

Because some cases are now counted as active-duty suicides that had not previously been included, the percentage of decedents for whom DONSIRs were available was somewhat lower than in earlier reports. DONSIRs were available for 384 of the 414 cases, for an overall data receipt rate of 93%. The Report of Casualty DD1300 required in the event of all active-duty deaths was available for all suicide decedents. Data from this form were used to supplement the DONSIR database so that information regarding demographics, military status, and the nature of the suicide act was complete for all decedents.

Computation of Rates and Analytic Strategy

SPSS statistical software (Rel 12.0.2, SPSS Inc., Chicago, IL) was used primarily in the data management and analyses for this report. Other analyses were programmed using Microsoft Excel. Because of the large number of analyses conducted, associations were considered statistically significant only if they attained significance at $p < .01$. Associations significant at $p < .05$ were reported as nonsignificant trends.

We conducted t tests for independent means and chi-square tests of association in order to compare the characteristics of DON suicide decedents between the USN and USMC, and to compare DON decedents by calendar year. We used a Poisson process model to test differences in suicide rates among different demographic subgroups within services. In cases where only two

groups were compared (e.g., gender), a binomial test was conducted (Fleiss, Levin, & Paik, 2003). Significance was based on the binomial likelihood of observing the number of suicides that occurred in the smaller subgroup (e.g., women) out of the total number of suicides, given the proportion of the total population constituted by that smaller subgroup. In instances where there are more than two subgroups to be compared (e.g., race), the multinomial model applies and a goodness-of-fit test was used to determine significant differences among rates (Larsen & Marx, 2001). Goodness-of-fit tests were calculated as:

Total population size: N

Total suicide deaths: D

Number of subgroups: M

Suicide deaths for i^{th} subgroup: o_i

Population count for i^{th} subgroup: n_i

Proportion parameter for i^{th} subgroup: $p_i = n_i / N$

Expected count for i^{th} subgroup: $e_i = Dp_i$

Chi-square statistic: $\chi^2 = \sum (o_i - e_i)^2 / e_i$

Degrees of freedom for χ^2 : $df = M - 1$

Crude suicide rates were expressed as the number of suicides per 100,000 persons per year in the relevant population (USN, USMC, DON, or U.S. civilian). Comparing rates across different populations is problematic if they differ markedly in demographic composition. For example, the DON population includes a much higher proportion of men than does the U.S. civilian population, and men are more likely than women to commit suicide. To address this issue, we directly standardized U.S. civilian suicide rates for DON demographics. These standardized rates estimate the suicide rate among civilians if they had the same demographics as the total DON (or the USN or USMC) in terms of age, sex, and race/ethnicity (White, Black, Asian/Pacific Islander, American Indian/Alaskan Native, Hispanic, Other/Unknown).

To directly compare suicide rates across demographically disparate groups, we used standardized mortality ratios (SMRs). SMRs were calculated as the total observed number of suicides (d) in study population A divided by the expected number of suicides if A had the same suicide rates (R_i) observed in standard population B for all demographic subpopulations. Alternatively, an SMR can be conceptualized as the crude suicide rate for population A divided by the directly standardized rate for population B, adjusted using the subpopulation counts (n_i)

from study population A. For this report, the following formulas were used to calculate crude and standardized suicide rates, SMRs, and the upper and lower 99% confidence interval limits (CI_U and CI_L) for SMRs (Julious, Nicholl, & George, 2001; Ulm, 1990):

$$\text{Crude rate: } \frac{d}{\sum n_i}$$

$$\text{Standardized rate: } \frac{\sum n_i R_i}{\sum n_i}$$

$$\text{SMR: } \frac{d}{\sum n_i R_i}$$

$$CI_L: \frac{\chi^2}{2 \sum n_i R_i} \text{ where } P(\chi^2_{df=2d}) = .995$$

$$CI_U: \frac{\chi^2}{2 \sum n_i R_i} \text{ where } P(\chi^2_{df=2[d+1]}) = .005$$

An SMR greater than 1.00 indicates that the observed rate for study population A (in the numerator) is larger than would be expected based on the rates from standard population B (in the denominator). Conversely, an SMR less than 1.00 shows that the observed rate for population A is smaller than expected, given the rates from B. If the confidence interval for an SMR does not include 1.00, one can conclude that, after taking demographics into consideration, rates for populations A and B are significantly different. Finally, an SMR multiplied by 100 can be interpreted as a percentage. It is the percentage of the suicides expected in the study population that were actually observed.

RESULTS

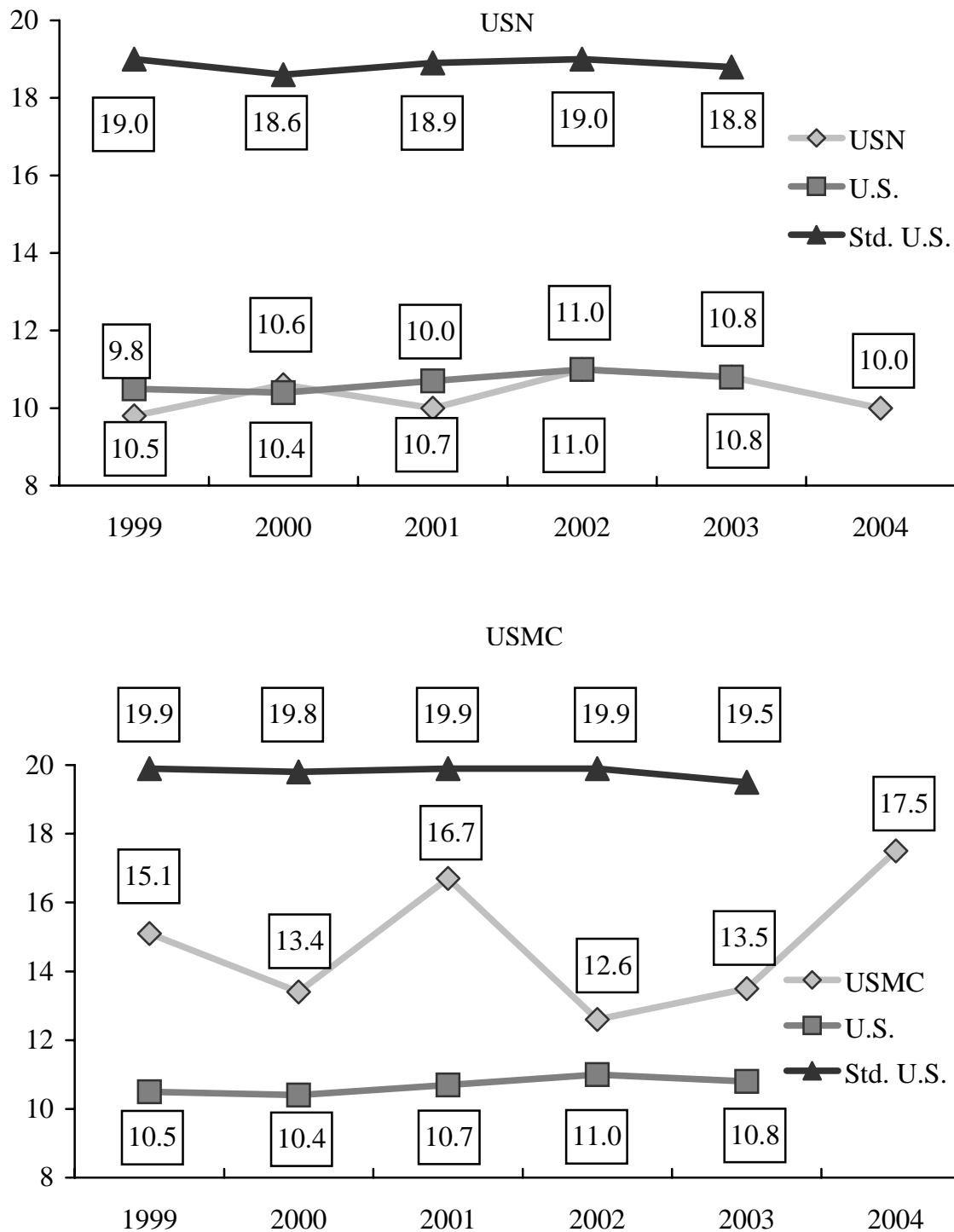
Between 1999 and 2004, 414 active-duty personnel within the DON (USN, 250; USMC, 164) committed suicide. The suicide counts by service and calendar year are listed in Table 1. Again, these counts reflect the new DoD guidelines regarding which military status categories must be included in active-duty counts, and therefore differ slightly from previous reports. About 8% of the decedents were Reservists on active duty, and the percentages of Reservists among decedents were similar between the Navy (6%) and the USMC (10%).

Table 1. Suicides in the Navy and the Marine Corps, 1999–2004

Year	Navy			Marine Corps			DON
	Regular	Reserve	Total	Regular	Reserve	Total	Total
1999	38	1	39	24	3	27	66
2000	39	3	42	22	2	24	66
2001	36	4	40	29	1	30	70
2002	43	2	45	22	1	23	68
2003	43	1	44	18	8	26	70
2004	38	2	40	33	1	34	74
Total	237	13	250	148	16	164	414

Suicide Rates

Across the 6-year data collection period (1999–2004), the overall suicide rate for the DON was 12.1 per 100,000 (USN 10.8; USMC 14.7). The difference between the crude suicide rates for the two services was statistically significant ($p < .01$). The suicide rate for the U.S. civilian population from 1999 to 2003 was 10.7 per 100,000 (National Center for Injury Prevention and Control, 2006). No information was available for 2004 U.S. data at the time of this report's preparation. Civilian and DON rates are not directly comparable because of differences in demographic composition. Figure 1 illustrates the differences between the DON and U.S. suicide rates, comparing USN and USMC suicide rates by year along with the corresponding crude and standardized U.S. civilian rates. Crude rate differences by year were not significant within either service. When the 1999-2003 suicide rate for the U.S. civilian population was adjusted to assume that it had the same demographic characteristics as the corresponding service, it was 18.8 per 100,000 for USN and 19.8 per 100,000 for the USMC. SMRs comparing the U.S. with the DON suicide rates suggest that the USN rate was 42% below the standardized U.S. rate and the USMC rate was 27% lower than the civilian rate (see Appendix Table A). These differences were statistically significant for both services ($p < .01$).

Figure 1. Navy^a, Marine Corps^a, and U.S. Population^b Suicide Rates, 1999–2004

Note. ^aMortality Surveillance Division, Armed Forces Medical Examiner System, Armed Forces Institute of Pathology; Suicide Prevention Program Manager, Personal and Family Readiness, Bureau of Naval Personnel; Behavioral Health Affairs Officer, Headquarters, U.S. Marine Corps. ^bNational Center for Injury Prevention and Control (2006); U.S. population data were not available for 2004. Standardized U.S. rates were adjusted for DON demographics (race, sex, and age).

Decedent Demographic Profile

Table 2 lists suicide rates in the USN and USMC by gender, age, race, and military status (officer/enlisted). For comparison, suicide rates are also shown for the corresponding U.S. civilian population. Appendix Figures A1 to A3 display the proportionate demographic characteristics of decedents with those of the USN and USMC populations. The crude rate of suicide across the 6-year study period (1999–2004) was significantly higher among men than among women for USN decedents ($p < .001$). This is consistent with gender differences in suicide rates in the U.S. civilian population. Gender differences in rates for USMC decedents did not reach significance, although the USMC suicide rate for women was lower than the rate for men. Since the observed suicide count for USMC women is still quite low, it is most likely that continued data collection will lead to sufficient statistical power to reliably detect this difference. It is possible, of course, that there are no reliable gender differences in the USMC or that gender differences in the USMC are less profound than they are among either Navy personnel or U.S. civilians. Continued data collection will help to discriminate among these possibilities.

There were no significant differences in crude suicide rates by age group within either the USN or the USMC (see Appendix Figure A2). Results were similar for race (White, Black, Asian/Pacific Islander, Native American, Hispanic, Other/Unknown). As in our last report, there was a trend for Native Americans to have a disproportionately high rate within the USN ($p < .05$). But, there were no significant differences in crude suicide rates by race/ethnic group within either service (see Appendix Figure A3).

In addition to crude suicide rates, Table 2 shows standardized rates using the total DON as the standard population. These standardized rates accommodate both within- and between-population comparisons in that they estimate what suicide rates would be for all subgroups if they had the same gender, age, and race/ethnic composition. However, it should be noted that standardized rates are hypothetical and do not provide an indication of the real size of the problem of suicide within a population. Furthermore, particularly within the two military populations, standardized rates are susceptible to unstable fluctuations due to small counts in population subgroups. Despite this, standardized rates for USN and USMC subgroups were generally similar to the crude rates. Additionally, standardized rates for the United States were generally higher than either crude or standardized rates for each of the services. The few

exceptions where military standardized rates exceeded those for the United States occurred for USMC women, USMC 35- to 44-year-olds, and USN and USMC Asian/Pacific Islanders.

To more formally test population differences in suicide rates, we computed SMRs by demographic subgroup. Appendix Table A lists these ratios, comparing USN and USMC crude suicide rates (numerator) with U.S. subgroup rates standardized for the demographics of each service (denominator). As can be seen in the table, only 3 of the 26 ratios exceeded 1.00, indicating that military rates were consistently lower than U.S. rates. Bolded figures indicate where the U.S. and military rates significantly differed, as evidenced by confidence intervals that do not include 1.00. We noted earlier that the overall rates for the USN and USMC were lower than would be expected given the U.S. population rates. Furthermore, USN rates were significantly lower than rates among U.S. civilians for the following subgroups: men, personnel aged 20–44 years, and White and Black personnel. Rates in the USMC were significantly lower than rates in the U.S. civilian population for men, personnel aged 20–24 years, and White personnel.

The three instances in which the SMR exceeded 1.00 indicate higher subgroup rates in the military than among U.S. civilians. This occurred for women in the USMC, and for Asian/Pacific Islander personnel in both services. In none of these cases was the SMR statistically significant. Moreover, women and Asian/Pacific Islanders are small groups in the DON; consequently, such rates are likely to be unstable because they are estimated based on very few suicides.

In addition to comparing DON and civilian suicide rates, we computed SMRs to compare USMC and USN demographic subgroups. In these ratios, USMC observed suicides were in the numerator and expected deaths given USN rates and USMC population proportions were in the denominator. In 10 out of 14 subgroup comparisons, the SMR was larger than 1.00. This pattern, coupled with the significant difference between these two services in the overall suicide rate, suggested that rates are generally higher in the USMC than in the USN. However, none of the SMRs for individual demographic subgroups were statistically significant. Continued data collection will help to determine which observed subgroup differences are reliable.

Table 2. USN, USMC, and U.S. 6-Year Suicide Rates (1999–2004) by Demographic Group

Demographic Group	^a USN		^a USMC		^b U.S. Population	
	Crude	Std ^c	Crude	Std ^c	Crude	Std ^c
Total	10.8	11.1	14.7	15.6	10.7	19.1
Gender						
Male	12.1	12.2	15.2	16.3	17.5	21.1
Female	3.0	3.3	7.5	10.6	4.1	4.3
Age in years						
17-19	13.5	13.1	14.8	11.7	9.4	14.4
20-24	11.1	11.3	14.5	13.8	12.2	19.5
25-34	9.3	9.6	14.6	14.7	12.6	19.3
35-44	11.6	12.7	18.0	23.9	14.8	20.5
45-54	12.3	14.4	0.0	0.0	15.1	19.8
Race/Ethnicity						
White	11.8	12.2	16.3	16.7	12.9	22.0
Black	8.4	8.2	12.1	10.7	5.4	14.7
Asian/Pac Island	10.1	11.3	21.3	30.1	5.4	9.5
Native American	21.8	29.5	9.7	6.5	12.6	33.4
Hispanic	8.1	8.1	6.9	5.0	5.0	10.3
Other/Unknown	0.0	0.0	24.7	18.6	NA	NA
Military status						
Officer	6.6	6.6	8.5	6.7	NA	NA
Enlisted	11.5	11.8	15.5	17.0	NA	NA

Note. ^aMilitary figures are calculated using endstrengths from personnel data (Gunderson, Miller, & Garland, 2002). ^bU.S. data are for 1999 to 2003 (National Center for Injury Prevention and Control, 2006); 2004 U.S. rates by subpopulation were not available at the time this report was prepared. ^cRates are standardized using total DON population proportions for gender, age, and race/ethnicity; USN and USMC rates are also standardized for military officer/enlisted status. NA = not applicable.

Decedent Career Profile

At the bottom of Table 2, USN and USMC suicide rates are listed for military officers and enlisted personnel. The 1999–2004 crude suicide rate for DON officers (7.1) was lower ($p < .01$) than the rate for enlisted personnel (12.8; USN, officer = 6.6, enlisted = 11.5; USMC, officer = 8.5, enlisted = 15.5). Separately by service, differences between these two military populations were not significant, though the USN result was marginal ($p < .05$). However, differences in suicides rates between officers and enlisted personnel have been consistent across the U.S. military services (Helmkamp, 1995; Rothberg & Jones, 1987). There were no differences in crude suicide rates for personnel grouped by length of service (0–4, 5–9, 10–14, 15+ years) or enlisted paygrade (E1–E3, E4–E6, E7–E9) within either service. Figures 2 through 4 show the distributions of personnel by (a) officer versus enlisted status, (b) length of service, and (c) paygrade, comparing suicide decedents with the total USN and USMC populations. Figure 2 illustrates a consistent trend across services with enlisted personnel overrepresented among suicide decedents by 5%. In general, however, it is clear that service characteristics are very similarly distributed among suicide decedents in comparison with the DON population.

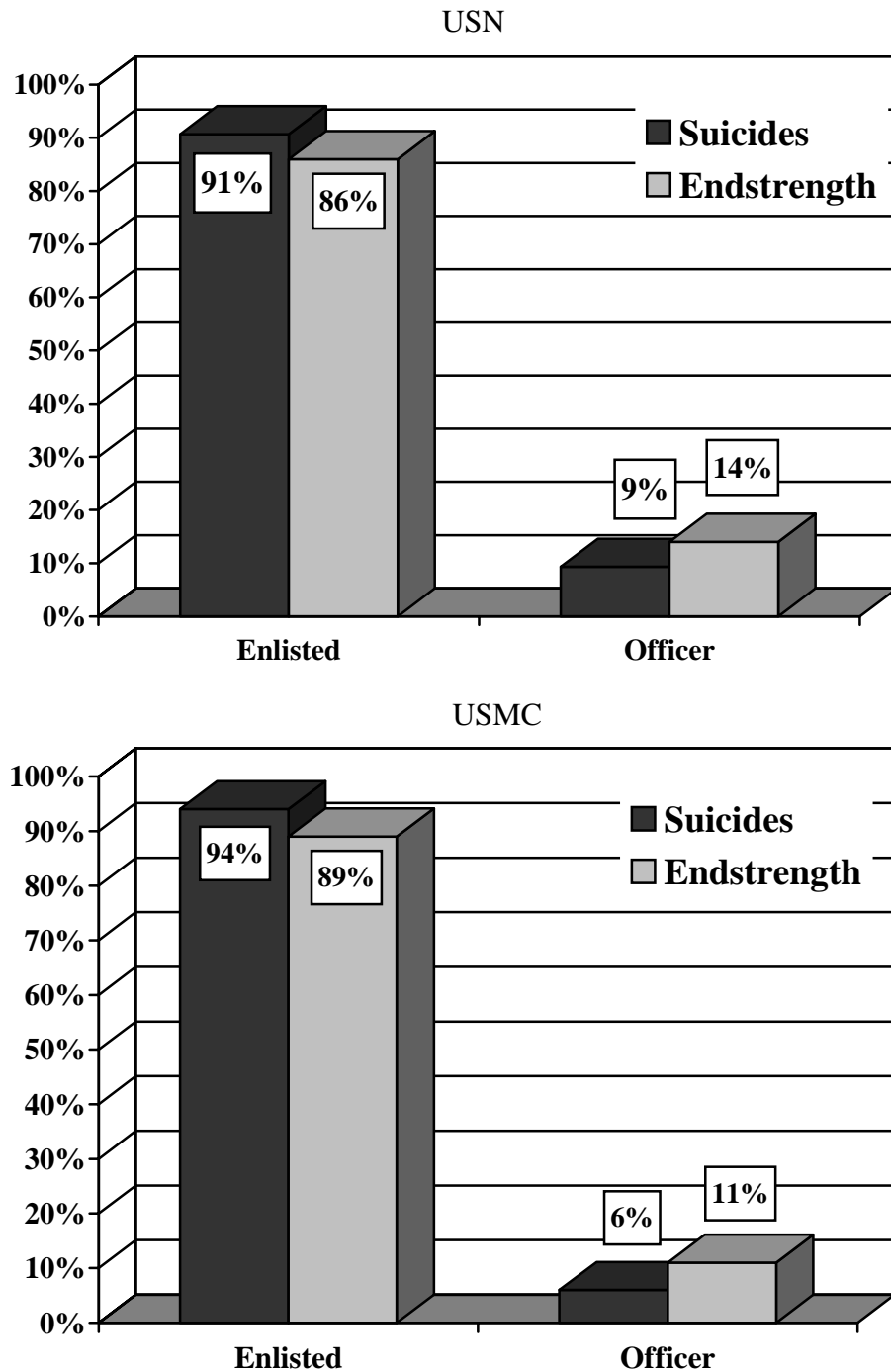
Figure 2. Officer/Enlisted Status of DON Suicide Decedents, 1999–2004

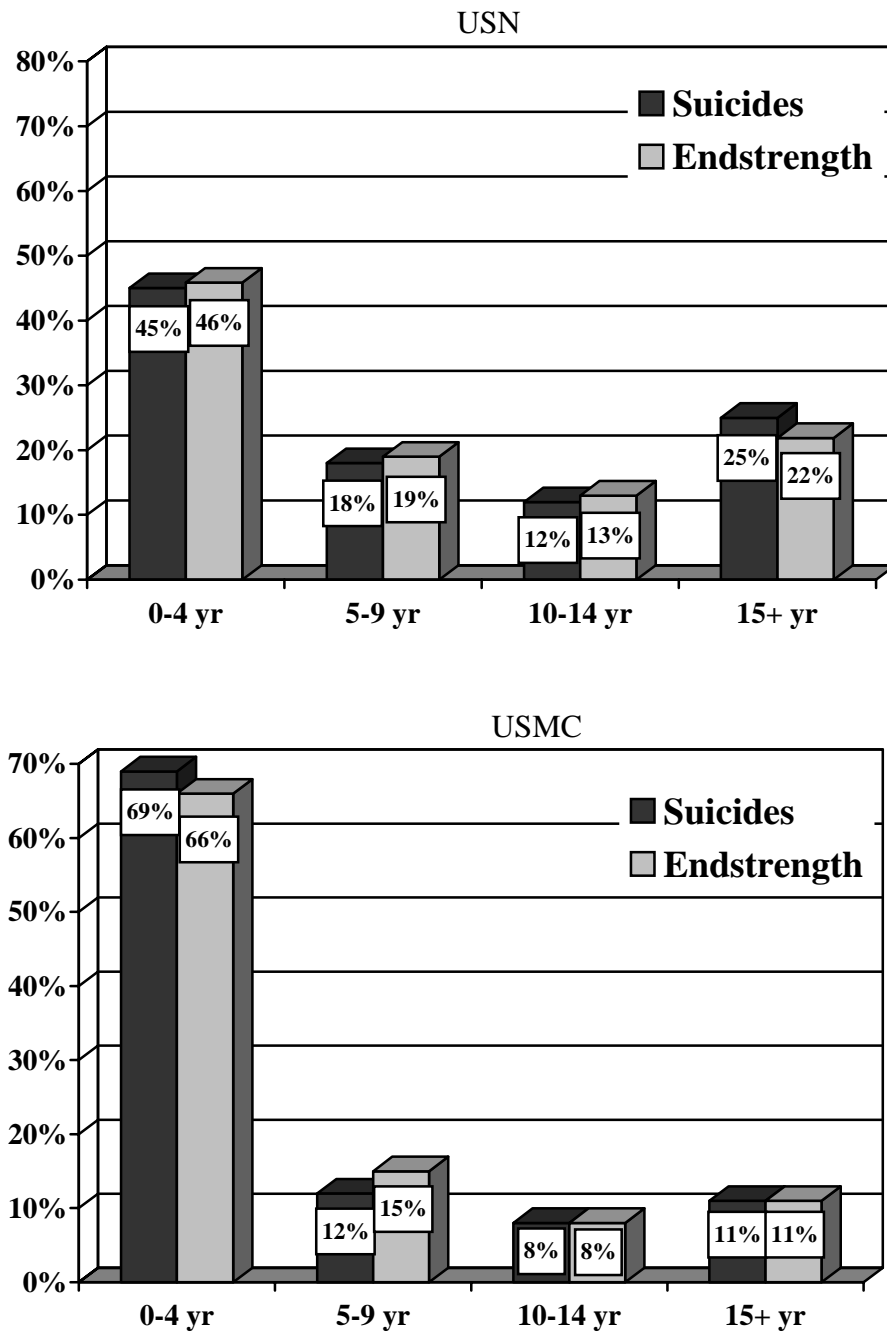
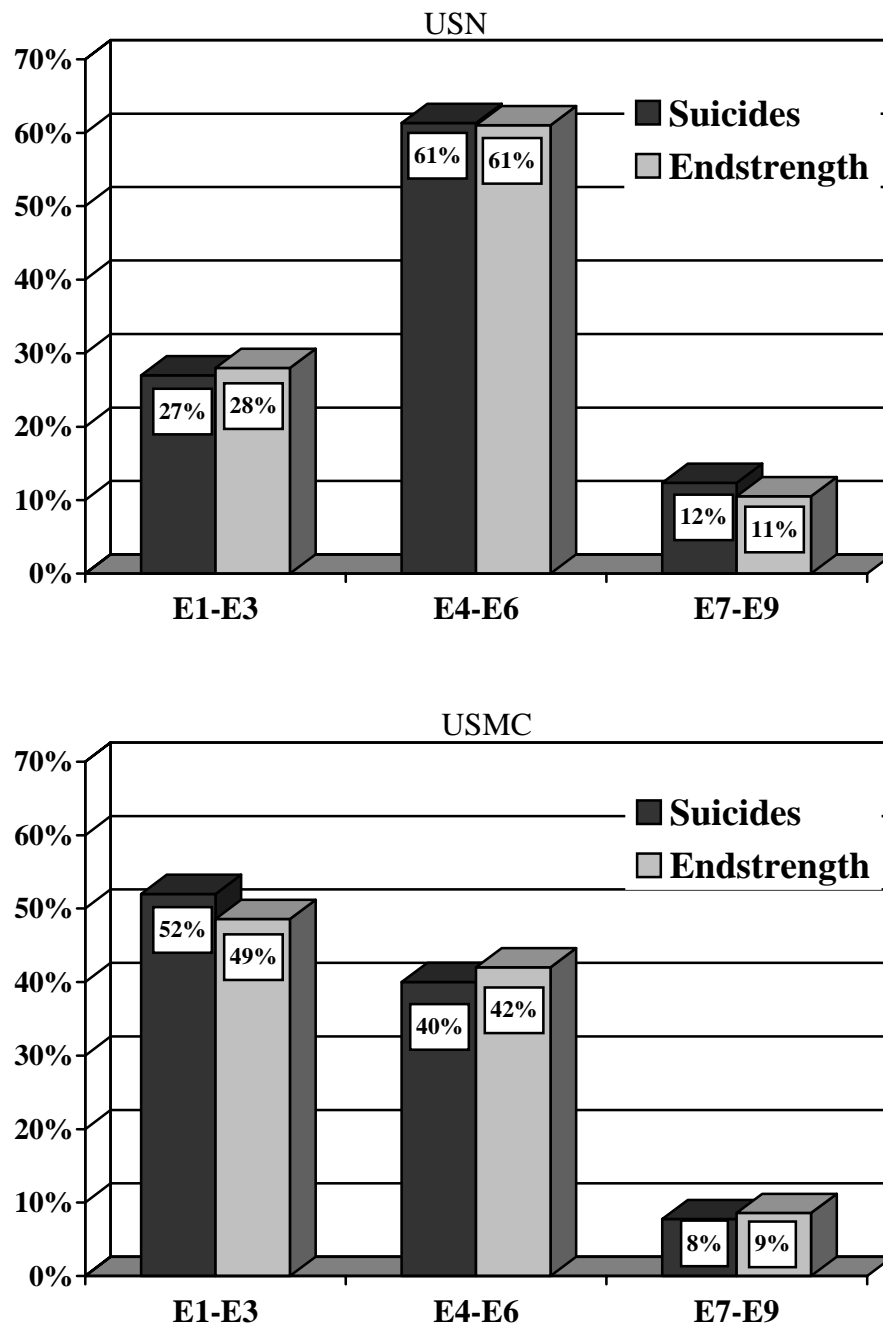
Figure 3. Years of Service at Time of Suicide, 1999–2004

Figure 4. Paygrade of Enlisted DON Suicide Decedents, 1999–2004

Suicide Event Characteristics

Figures 5 through 9 describe the characteristics of completed suicides within the DON from 1999–2004.¹ In Figure 5, shore commands were most common for decedents. There was a significant service difference ($p < .001$) in type of command assignment, due to the fact that

¹ Sample size varies due to missing data, as indicated for each figure.

ships and submarines are not permanent duty assignments for USMC personnel as they are in the USN. Differences in command type were not significant by calendar year.

Figure 5. Decedents' Command Type at Time of Suicide, 1999–2004 ($N = 414$)

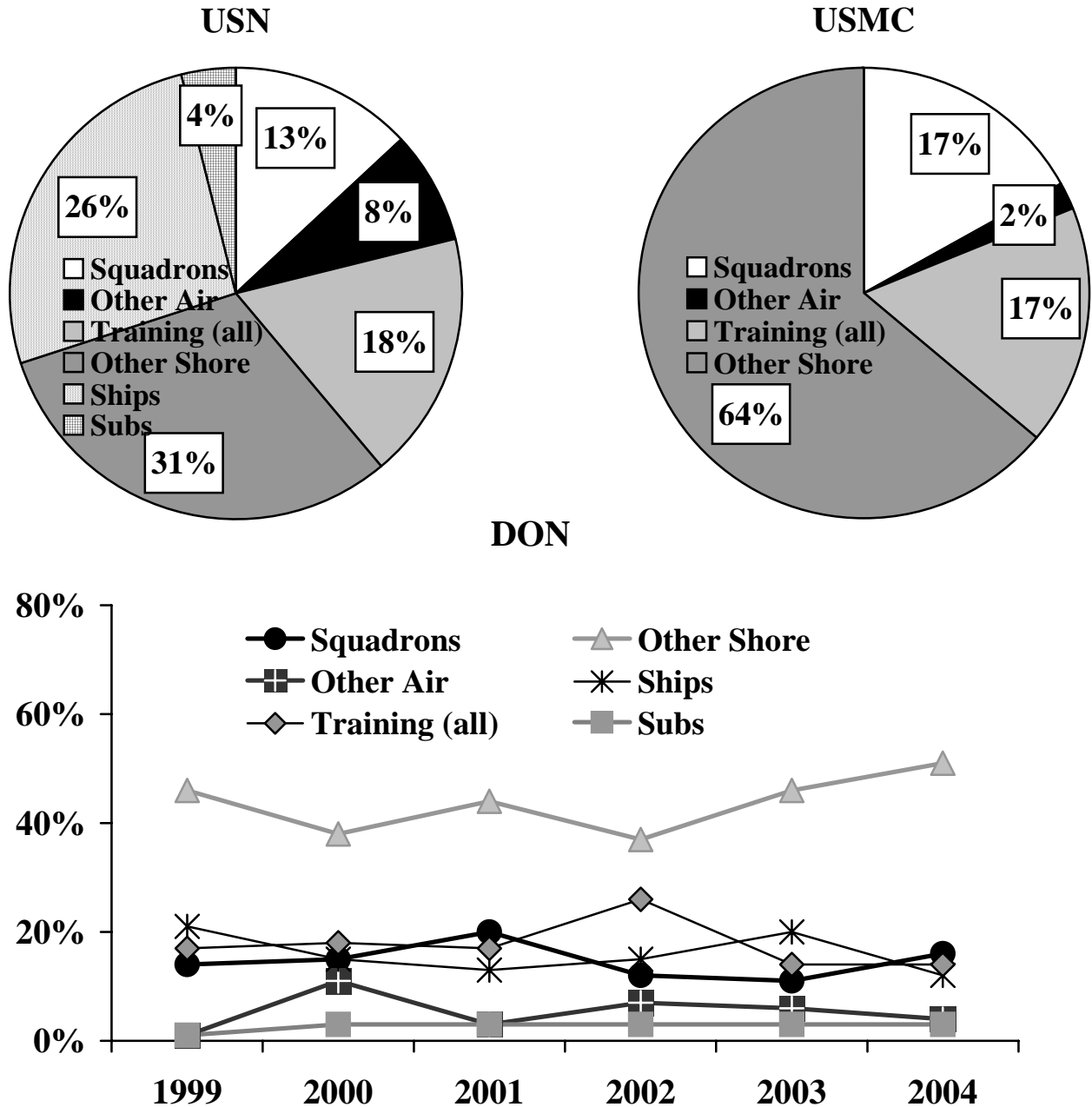
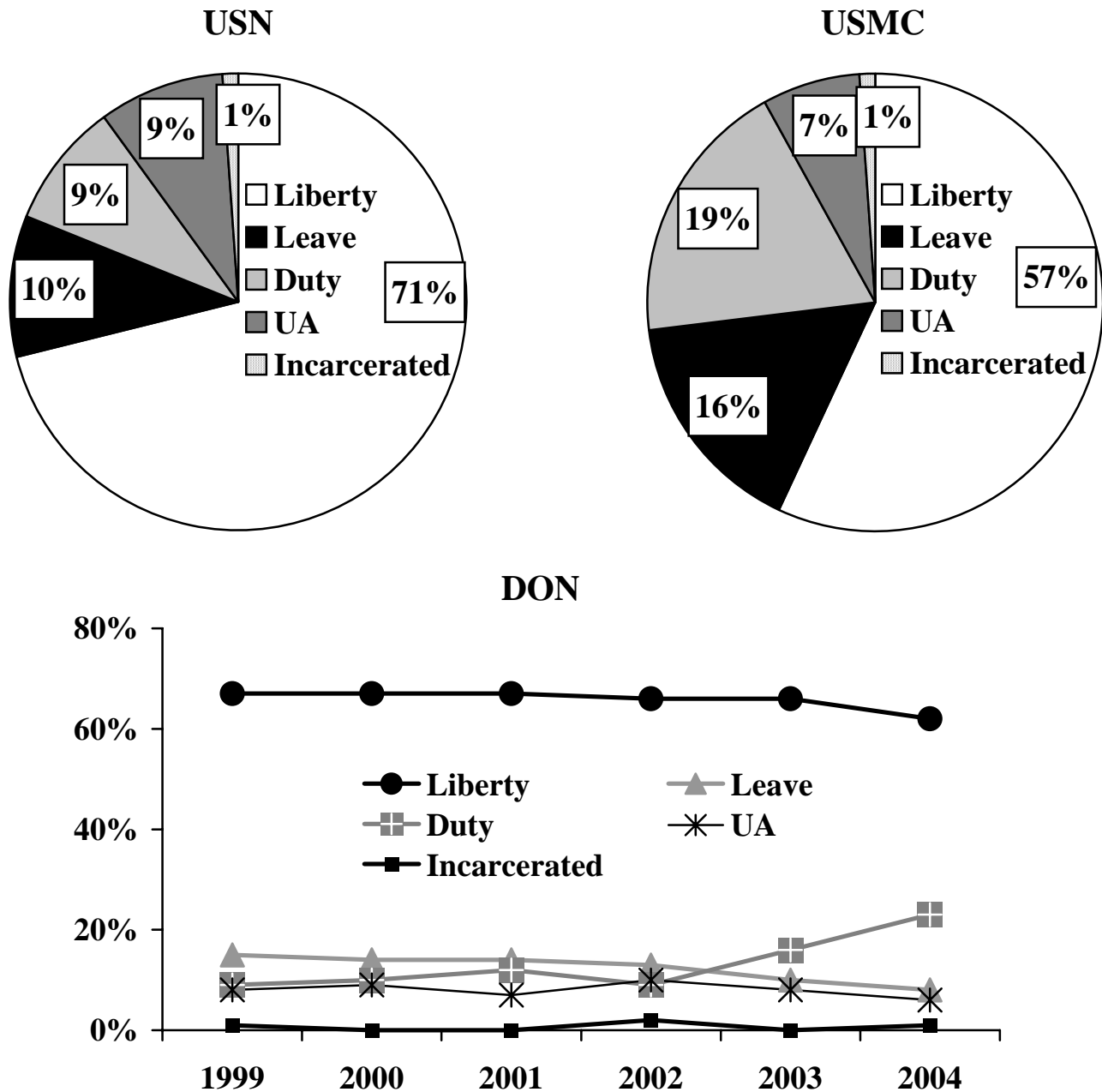
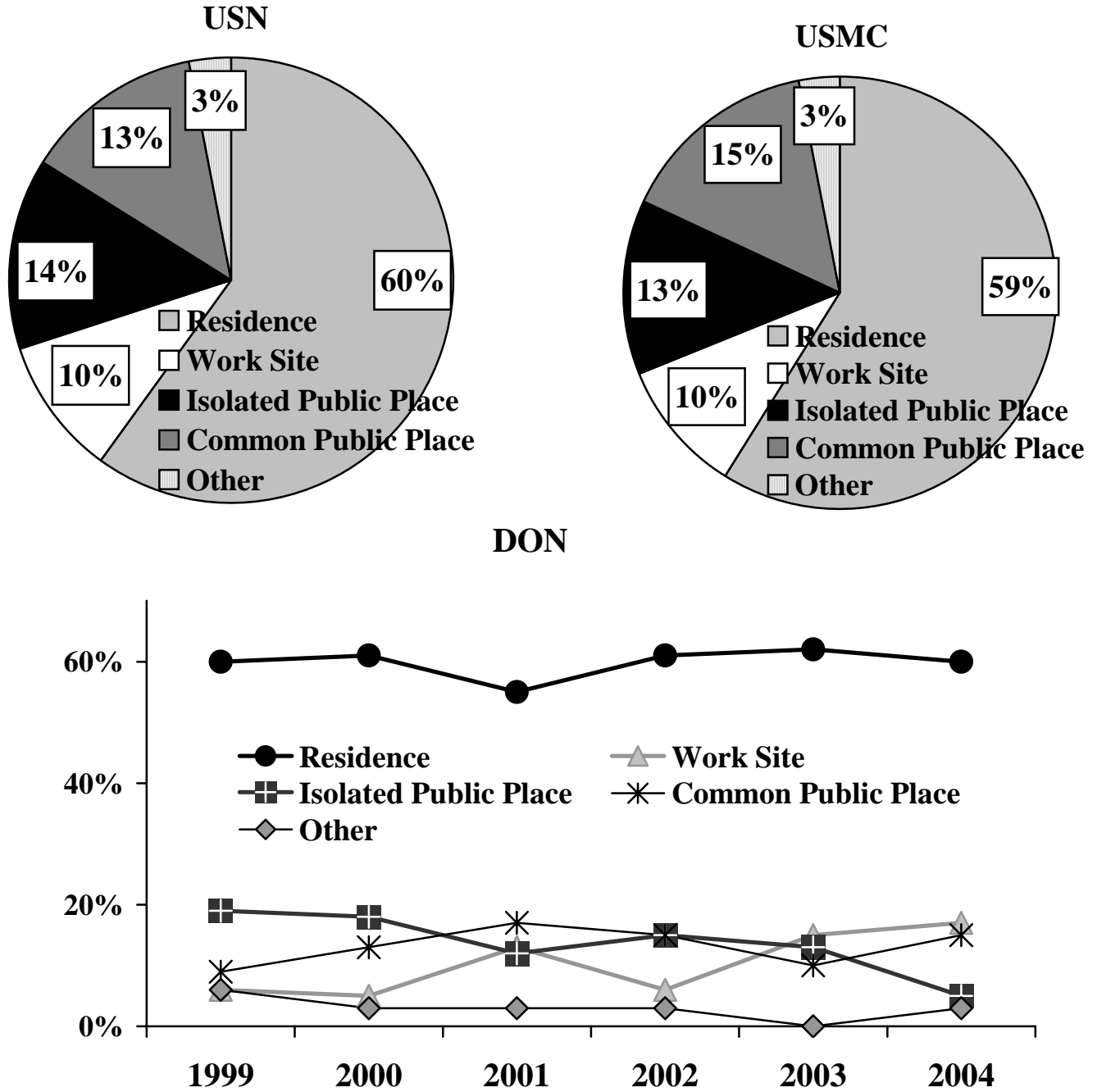


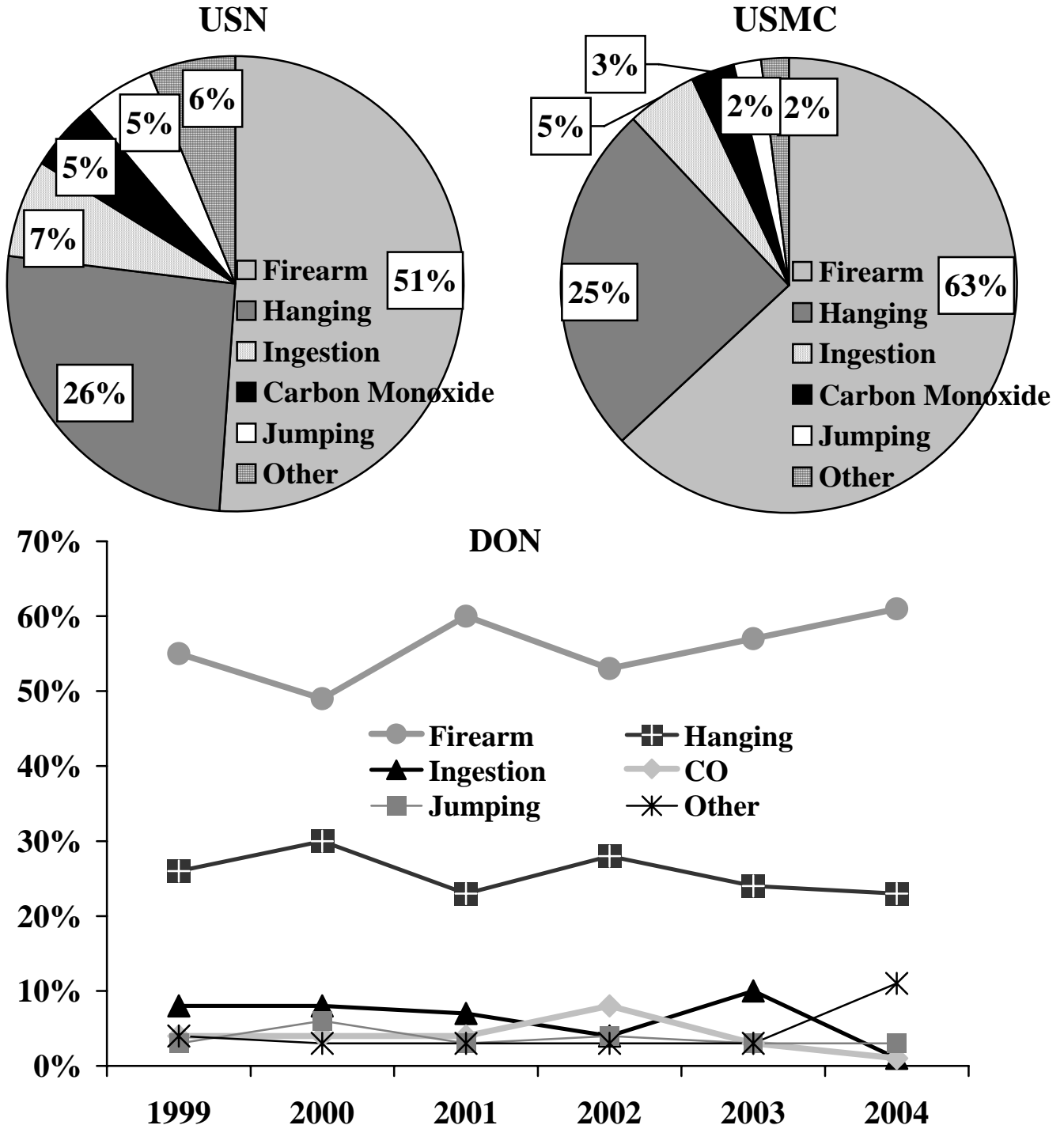
Figure 6. Decedents' Duty Status at Time of Suicide, 1999–2004 ($N = 414$)

At the time of suicide, most DON decedents were on liberty (see Figure 6). There were no significant differences in duty status at time of death by calendar year. By service, USMC decedents were more often on duty at time of death ($p < .01$) than were USN decedents. However, this pattern has not been stable over time.

Figure 7. Location of Suicide Event, 1999–2004 ($N = 402$)

Most often, decedents chose to commit suicide in a private residence (see Figure 7). There were no significant differences in decedents' choice of suicide site by service or calendar year of suicide.

Figure 8. Method of Suicide, 1999–2004 ($N = 414$)



The most common method of suicide was the use of a firearm, followed by hanging. Together, these two methods accounted for 77% of USN suicides and 88% of USMC suicides (see Figure 8). There was a trend indicating that fewer USN than USMC decedents used a

firearm to commit suicide ($p < .05$). Decedents who were aboard ships or on other government property at the time of their suicide were significantly less likely to have used a firearm and more likely to have chosen hanging (see Table 3, $p < .001$). This is likely because access to firearms is restricted on military property. Among those who chose to commit suicide on government property, there were no differences between USMC and USN personnel in the use of firearms as a method of suicide. There were marginal associations between using a gun to commit suicide and both military firearm training and access ($p < .05$; see Table 4). Those who chose to use a firearm were more likely to have had some training with weapons and to have had access to a military weapon. This relationship was probably weakened by the fact that data on firearm access and training were not available for 1999. Despite this pattern, only 13% of the guns used by DON personnel to commit suicide were military weapons. Firearm use was not significantly related to gender, age, race, officer/enlisted status, education level, or marital status. There was a marginal relationship between enlisted paygrade and firearm use ($p < .05$); a smaller percentage of junior enlisted (E1 to E3; 48%) than more-senior enlisted personnel (59%) used a firearm.

Table 3. Method of Suicide by Military Versus Nonmilitary Location of Suicide

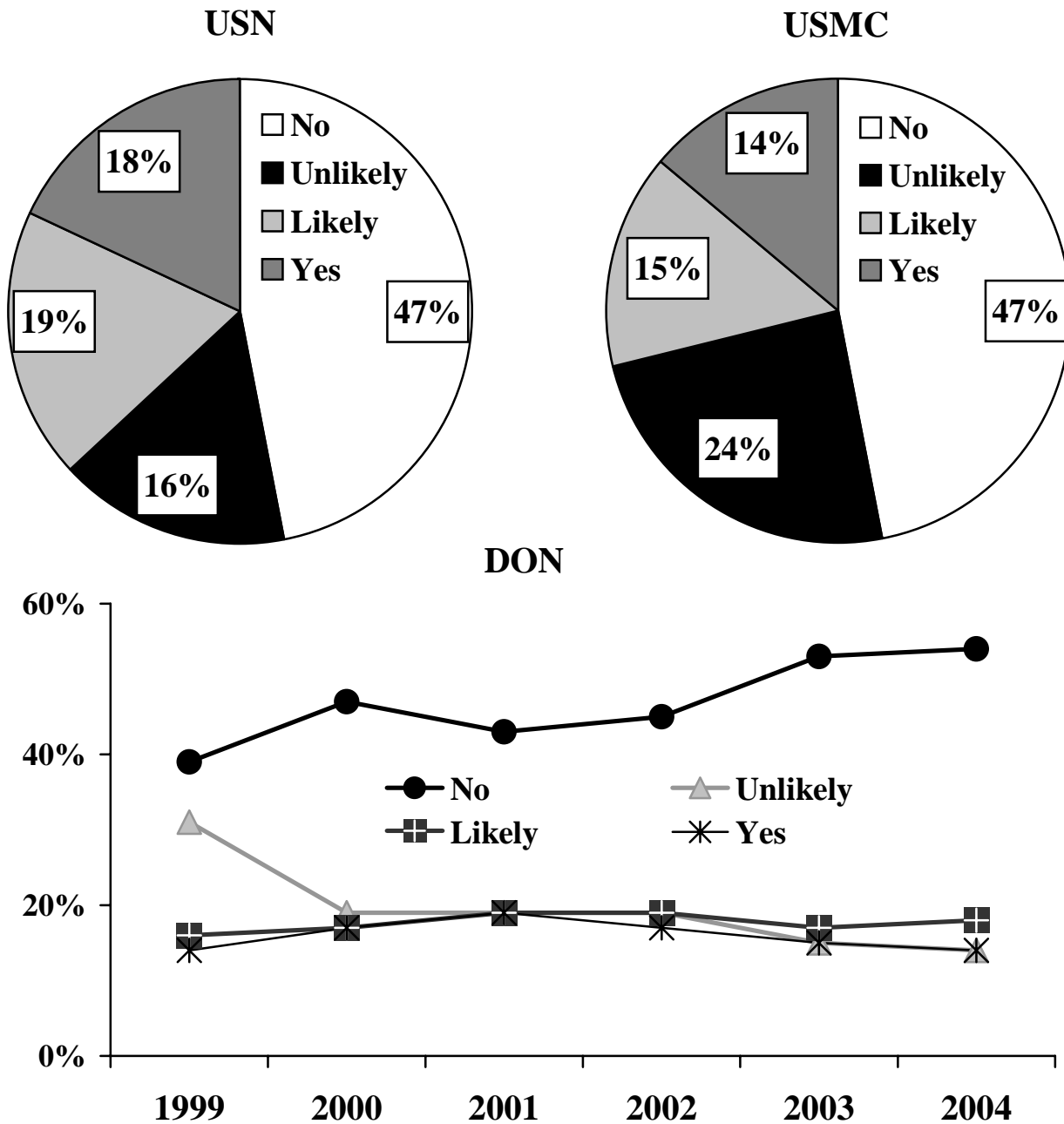
Location	Method		
	Firearm	Hanging	Other
Nonmilitary	64%	15%	21%
Military	40%	46%	14%

Note. $N = 414$.

Table 4. Method of Suicide by Access to and Training With Military Weapons

Method	Access		Training	
	Yes	No	Yes	No
Gun	66%	54%	65%	54%
Other	34%	46%	35%	46%

Note. $N = 287$ –292.

Figure 9. Use of Alcohol at Time of Suicide, 1999–2004 ($n = 343$)

In general, POCs reported that decedents were not drinking alcohol at the time of suicide or that it was unlikely alcohol was involved (USN, 63%; USMC, 71%). There were no differences in reports of alcohol use at time of suicide by service or calendar year (see Figure 9).

Risk Factors for Suicide

The DONSIR asks POCs if there was any evidence that decedents had experienced a number of specific problems that might have precipitated their choice to commit suicide. These included 26 key risk factors and 14 possible associated stressors.

Key Risk Factors. The 26 key risk factors for suicide assessed by the DONSIR can be summarized in four categories: (a) mental health history, (b) recent emotional state, (c) recent change in affect or behavior, and (d) self-destructive or aggressive behavior (see Appendix Table B). On average, POCs found evidence of 4 to 5 ($M = 4.3$) key risk factors. The key risks most commonly noted were recent depression, a history of psychiatric treatment, recent anxiety, recent feelings of guilt or shame, and alcohol abuse within the previous year (see Figure 10). The average number of key risk factors reported did not significantly differ by service (USN, $M = 4.34$; USMC, $M = 4.22$). There was only one significant service difference in key risk factors ($p < .01$). POCs reported more alcohol problems for USN than for USMC decedents. They also tended to report more feelings of loneliness for USN than USMC decedents ($p < .05$).

Associated Stressors. The 14 associated stressors explored by the DONSIR are contextual problems that may have led to suicide, such as relationship problems, legal or disciplinary difficulties, and work-related problems (see Appendix Table C). On average, POCs noted about three contextual stressors for each decedent ($M = 2.97$). The five most commonly reported associated stressors were problems in a primary romantic relationship, physical health problems, work issues (such as poor performance), recent military legal or administrative action, and job dissatisfaction (see Figure 11). The number of associated stressors indicated per decedent did not differ by service (USN, $M = 3.00$; USMC, $M = 2.93$) nor did the prevalence of any specific stressor.

The number of key risk factors and the number of associated stressors reported were significantly correlated ($r = .44$, $p < .01$). Those with the most key risks tended to have the most associated stressors. Table 5 and Figure 12 illustrate this relationship and also highlight the level of skewness in the distribution. It is possible that this relationship is spurious, due to the fact that POCs who were conscientious found both more key risk factors and associated stressors, while those who spent little time found few of either. Considering both types of factors together, POCs noted 10 or more indicators for suicide among well over a quarter (29%) of the decedents.

Figure 10. Most Common Key Risk Factors for Suicide Reported for DON Decedents, 1999–2004

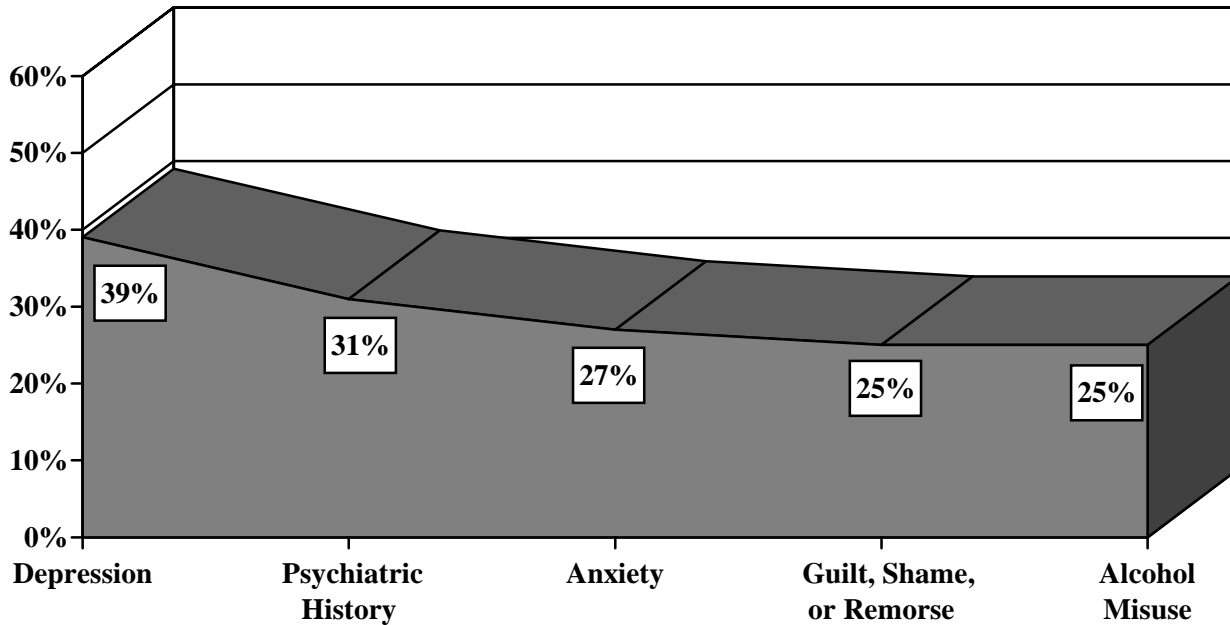


Figure 11. Most Common Associated Stressors Reported for DON Decedents, 1999–2004

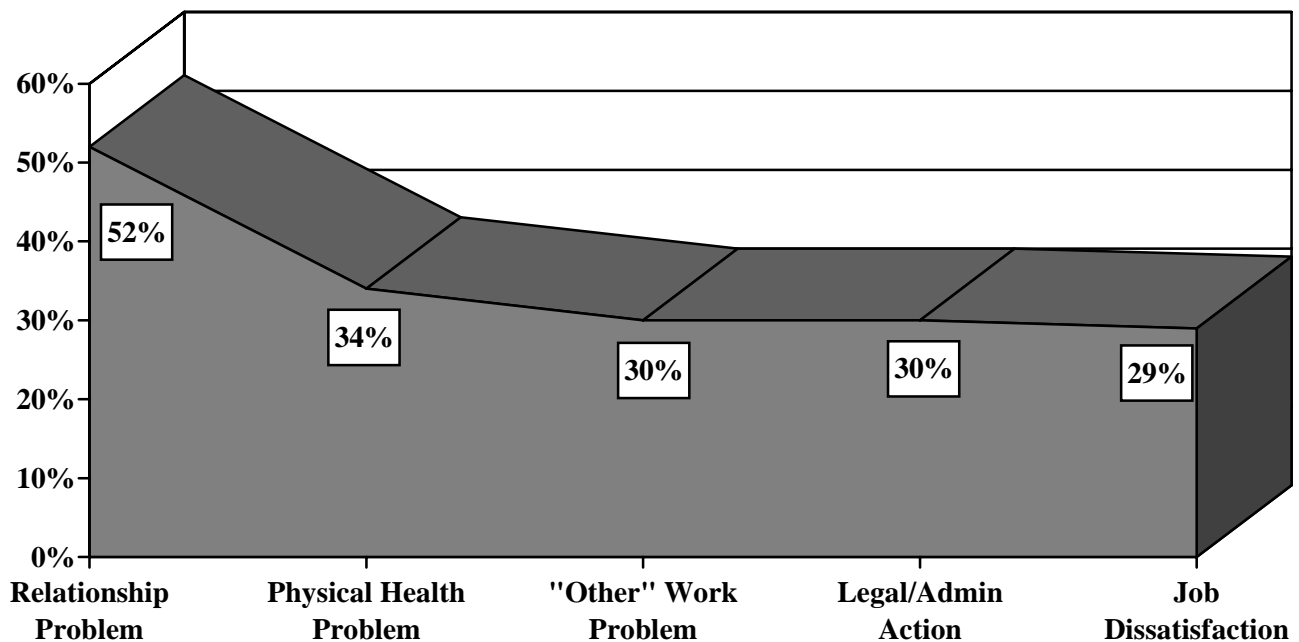
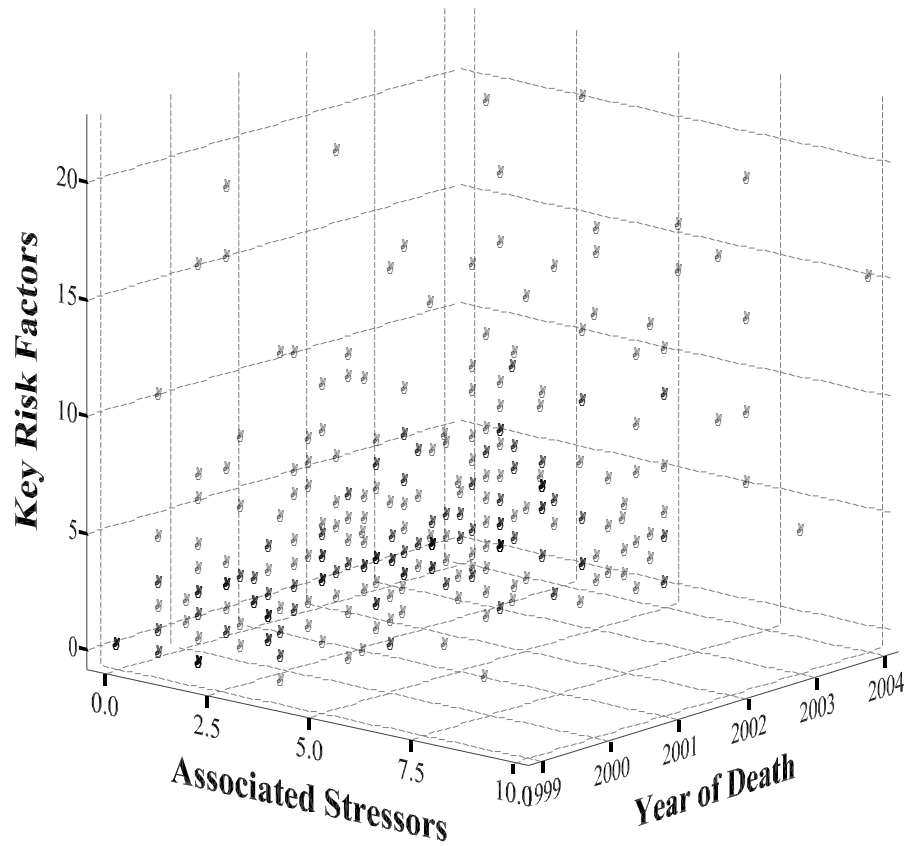


Table 5. Most Common Key Risk Factors for Suicide Reported for DON Decedents, 1999–2004

Stressors	Key Risk Factors				
	None	1 to 2	3 to 4	5 to 6	7+
None	17 (5%)	13 (4%)	0 (0%)	0 (0%)	0 (0%)
1 to 2	29 (9%)	51 (15%)	26 (8%)	14 (4%)	21 (6%)
3 to 4	11 (3%)	23 (7%)	23 (7%)	10 (3%)	28 (8%)
5 to 6	2 (1%)	14 (4%)	4 (1%)	4 (1%)	17 (5%)
7+	0 (0%)	1 (<1%)	6 (2%)	6 (2%)	19 (6%)

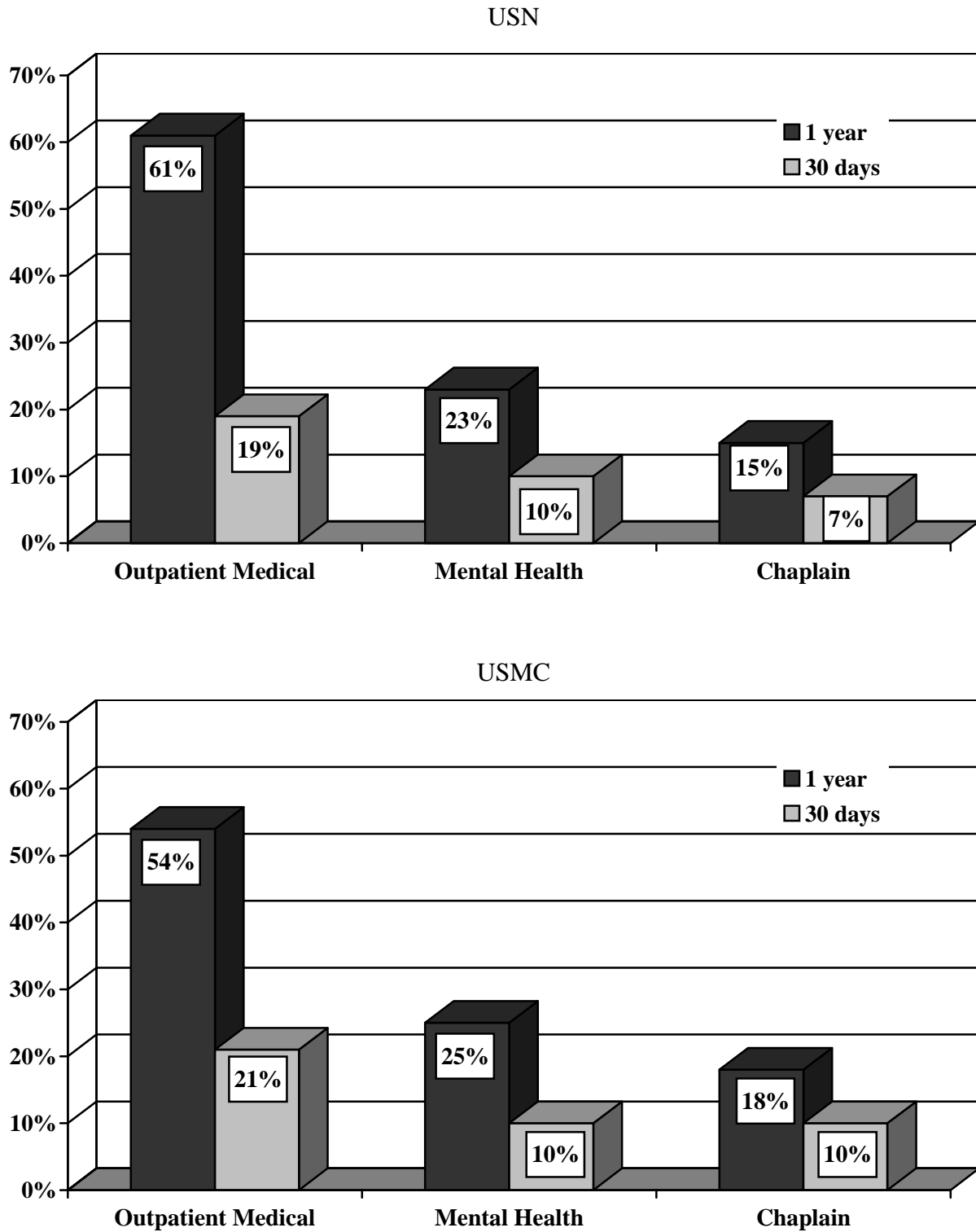
Note. $N = 339$.

Figure 12. Association Between Key Risk Factors and Associated Stressors for DON Decedents, 1999–2004

Recent Service Use

POCs were asked to report whether there was evidence that decedents had accessed any of 11 different types of professional support services within the month or the year prior to suicide. The percentage of decedents for whom POCs noted evidence of specific support service use is shown in Appendix Table D. For 71% of the decedents, POCs reported no evidence of any service use in the last 30 days before suicide (USN, 70%; USMC, 72%). Within the previous year, decedents had used an average of 1.59 of these services (USN, $M = 1.59$; USMC, $M = 1.60$). There were no significant differences between USN and USMC decedents in the number of support services accessed in the last 30 days or the last year, nor in the percentage using any specific type of service in the last 30 days. The most common type of service used in the 30 days prior to suicide was outpatient medical care, followed by mental health counseling and chaplain service use (see Figure 13). Twenty percent of DON decedents had been seen at outpatient medical facilities within 30 days of suicide.

Figure 13. Most Common Support Services Used by DON Decedents in the Year Prior to Suicide, 1999–2004



DISCUSSION

This report summarizes data regarding all completed suicides in the DON across 6 years of surveillance using the Suicide Incident Report. Overall, patterns of suicide characteristics have become more stable as more data have accumulated. As in our last report, results confirmed that suicide rates have been significantly lower in the USN and USMC than they have been in the U.S. civilian population after taking demographics into account. Most suicide decedents have been male, and suicide rates have been significantly higher among men than among women. Furthermore, the suicide rate has been significantly lower for officers than for enlisted personnel. Suicides generally have occurred while the decedent was on liberty and at a private residence. A firearm has been the most common method of suicide overall; however, those decedents who were USMC personnel, had military training in or access to firearms, or were on private property at time of death, appear somewhat more likely than others to have chosen this method. We did not find significant differences in suicide rates based on age, length of service, enlisted paygrade, or race/ethnicity.

The key risk factors for suicide most commonly noted were recent depression, a history of psychiatric treatment, recent anxiety, recent feelings of guilt or shame, and alcohol abuse within the previous year. The five most commonly noted associated stressors were problems in a primary romantic relationship, physical health problems, work issues (such as poor performance), recent military legal or administrative action, and job dissatisfaction. Multiple key risk factors and associated stressors were common, with evidence of 10 or more for a quarter of the decedents. Despite this, it appears that few decedents sought help; for 71% of the decedents, POCs reported no use of military support services in the month prior to their suicide acts.

Many findings regarding suicide rates for military personnel in other military services within the United States and abroad have been similar to those noted here for the DON. In particular, rates of suicide among military personnel have been lower than rates among comparable civilian populations (Defence Analytical Services Agency, 2005, 2006; Fear & Williamson, 2003; Flach, 1988; Helmkamp, 1995; Hytten & Weisaeth, 1989; Mancinelli et al., 2003; Mancinelli et al., 2001; Ponteva, 1983; Schroderus, Lonnqvist, & Aro, 1992). Low rates of suicide in different military services have been attributed to entrance screening practices in modern military organizations, social cohesion among military troops, and multiple support

services available to military personnel (Bodner, Ben-Artzi, & Kaplan, 2006; Schroderus et al., 1992).

As we found in this report, lower rates of suicide among officers than enlisted personnel have been reported in other countries, including the United Kingdom and Italy (Blatchley, Ward, & Fear, 2004; Mancinelli et al., 2001). This difference has not been noted as commonly or consistently in international studies as the finding that military suicide rates overall are somewhat lower than civilian rates. For example, a study in Germany found no consistent pattern in relation to officer/enlisted status (Flach, 1988). However, lower rates of suicide among officers have been noted within all of the U.S. armed services for some time (Helmkamp, 1995; Rothberg & Jones, 1987).

The most common method of suicide appears somewhat disparate across international military populations, largely due to differences in availability of different methods. Specifically, countries where personal firearms are not legal have very low rates of suicide or parasuicide by firearm (Lim & Ang, 1992; Ward & Fear, 2004), while, when available, the use of a firearm is the most common method, implicated in 30% to 60% of cases (Flach, 1988; Mancinelli et al., 2003; Mancinelli et al., 2001; Marttunen, Schroderus, Henriksson, Lonnqvist, & Pelkonen, 1997; Ponteva, 1983). Reports of U.S. and foreign services have suggested that the use of guns in suicide may be elevated in military populations, at least those where a weapon is a primary occupational tool (Helmkamp, 1996; Hytten & Weisaeth, 1989; Ponteva, 1983; Ward & Fear, 2004). However, where military weapons are carefully controlled, the specific use of a military weapon appears less common, and careful control over access to military weapons is probably an important factor in reducing suicides with military firearms (Marttunen et al., 1997).

Beyond demographic characteristics, comparative studies of suicide and suicide attempts in military populations have reported that social or relationship problems, depression, and involvement with military mental health services may be risk factors for suicide (Angst & Clayton, 1998; Apter et al., 1993; Gaines & Richmond, 1980; Hytten & Weisaeth, 1989; Marttunen et al., 1997). However, these problems may be more acute than chronic, with major psychological disorders and physical illnesses less prevalent in comparison with civilian suicide decedents (Apter et al., 1993; Hytten & Weisaeth, 1989; Marttunen et al., 1997; Mehlum, 1990). Ponteva (1983) noted that, over time in the modern Finnish military, the proportion of psychiatric versus social problems as precipitating factors had shifted to include a greater

proportion of social and relationship issues. Furthermore, some studies suggest that military suicide decedents may actually have better performance histories than other personnel, and that perfectionism may distinguish certain types of suicidal behavior such as completed versus attempted suicide, or suicides among deploying versus nondeploying personnel (Apter et al., 1993; Bodner et al., 2006; Dycian, Fishman, & Bleich, 1994; Mancinelli et al., 2003; Mancinelli et al., 2001).

DONSIR data are not collected for any comparison groups in order to assess the extent to which specific key risks and associated stressors might be more prevalent among DON suicide decedents than they are among the general DON population or among civilian suicide decedents. Furthermore, international studies of risk factors for suicide among military personnel have not consistently included comparison groups, have not evaluated the same subsets of risk factors, and frequently have been based on small numbers of suicide cases (Angst & Clayton, 1998; Apter et al., 1993; Hytten & Weisaeth, 1989; Marttunen et al., 1997; Mehlum, 1990). Given these challenges, the importance of specific risk factors for suicide within military populations should be a focus for future research.

It is possible that there are different risk factors for different types of suicidal behavior or for suicides among persons in different military subpopulations; and it would be helpful to conduct population-specific research in this area. Furthermore, although at first there appear to be many similarities in patterns of suicide across international military populations, the dynamics of an all-volunteer force versus mandatory military service most likely have an impact on some risk factors, such as the timing of suicide (Flach, 1988; Mancinelli et al., 2003; Partonen, Aro, Schroderus, Lonnqvist, & Henriksson, 1994). Future studies of U.S. military populations that include comparison groups and large numbers of cases across multiple types of suicidal behavior would contribute greatly to this area of research.

CONCLUSION

The general findings described here are very much in line with previous annual DONSIR reports despite the fact that the numbers reflect new DoD-wide guidelines regarding what suicide deaths should be included in active-duty suicide rates and how those rates should be calculated. One of the goals of the DONSIR program is to facilitate the comparability of patterns in completed suicides over time and across services (Hourani & Hilton, 1999; Hourani et al., 2000; Hourani et al., 2001), and greater consistency in suicide surveillance throughout the DoD will help promote this goal. Furthermore, there are already future working groups planned under the direction of Health Affairs to better define suicide terminology and to consolidate a core dataset for suicide surveillance at the DoD level. Some of the efforts in defining terminology within the U.S. military will extend the focus from completed suicide to suicide attempts and gestures. These types of suicidal behaviors are harder to define, but affect military readiness and the welfare of service members in their own right.

There are limitations in the DONSIR process that should be considered in reviewing these results. In particular, POCs completing the report rarely have access to all requested information. Typically most accessible are demographic data, the circumstances of the suicide, and military information available in the decedents' personnel records. Information regarding family history, psychological risk factors, personal-life stressors, and support service use is less likely to be available. A substantial amount of personal information is available to POCs in military investigative reports, from the decedents' military colleagues, and through the Casualty Assistance Calls Officers who act as military liaisons to the decedents' families. However, it is important to remember that the DONSIR data include information available to POCs posthumously, and are not self-reported. POCs are instructed not to contact the decedent's family members directly. Though direct access to civilian informants would improve the quality of the data, it would also potentially burden grieving friends and families (Institute of Medicine, 2002).

In conclusion, the DONSIR facilitates the comparison of data on completed suicide across the USN and the USMC over time (Hourani & Hilton, 1999; Hourani et al., 2000; Hourani et al., 2001). It is an opportunity to evaluate military-specific correlates of suicide, which are not addressed in the civilian academic literature. The DONSIR's focus on military-specific risk factors is important because military personnel are not representative of the U.S.

population. The organizational structure of the military can potentially support suicide prevention policies and procedures that cannot be implemented among civilian populations.

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APPENDIX

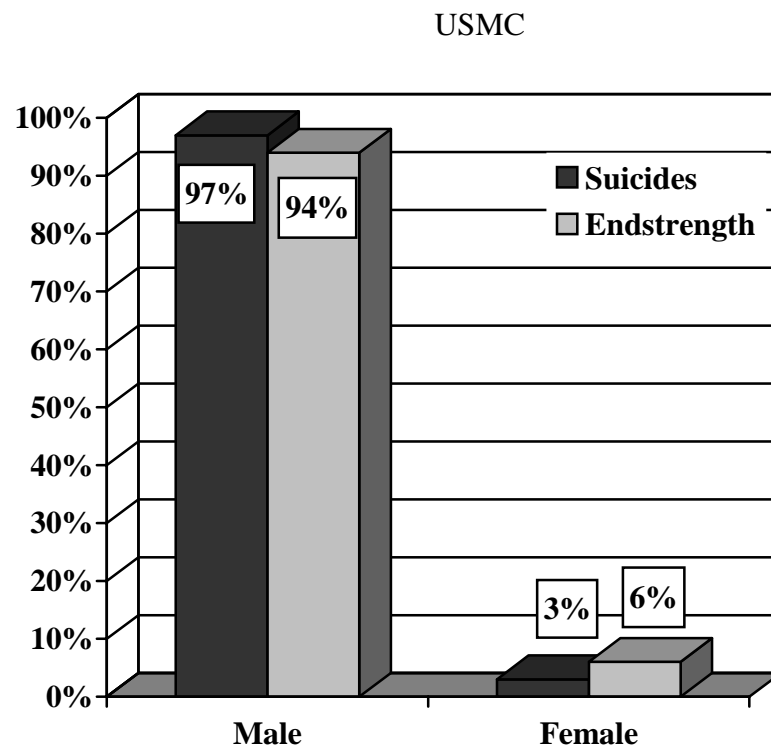
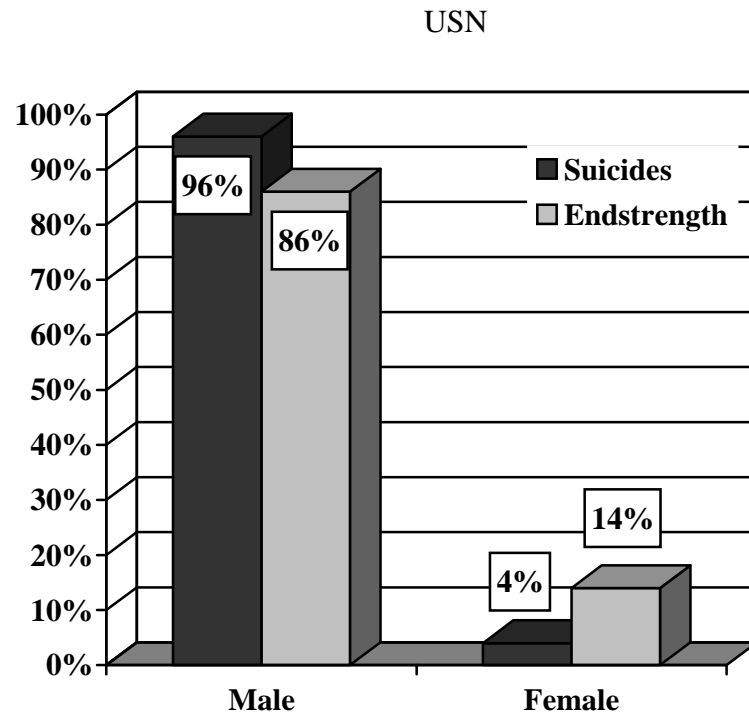
Figure A1. Gender of DON Suicide Decedents, 1999–2004

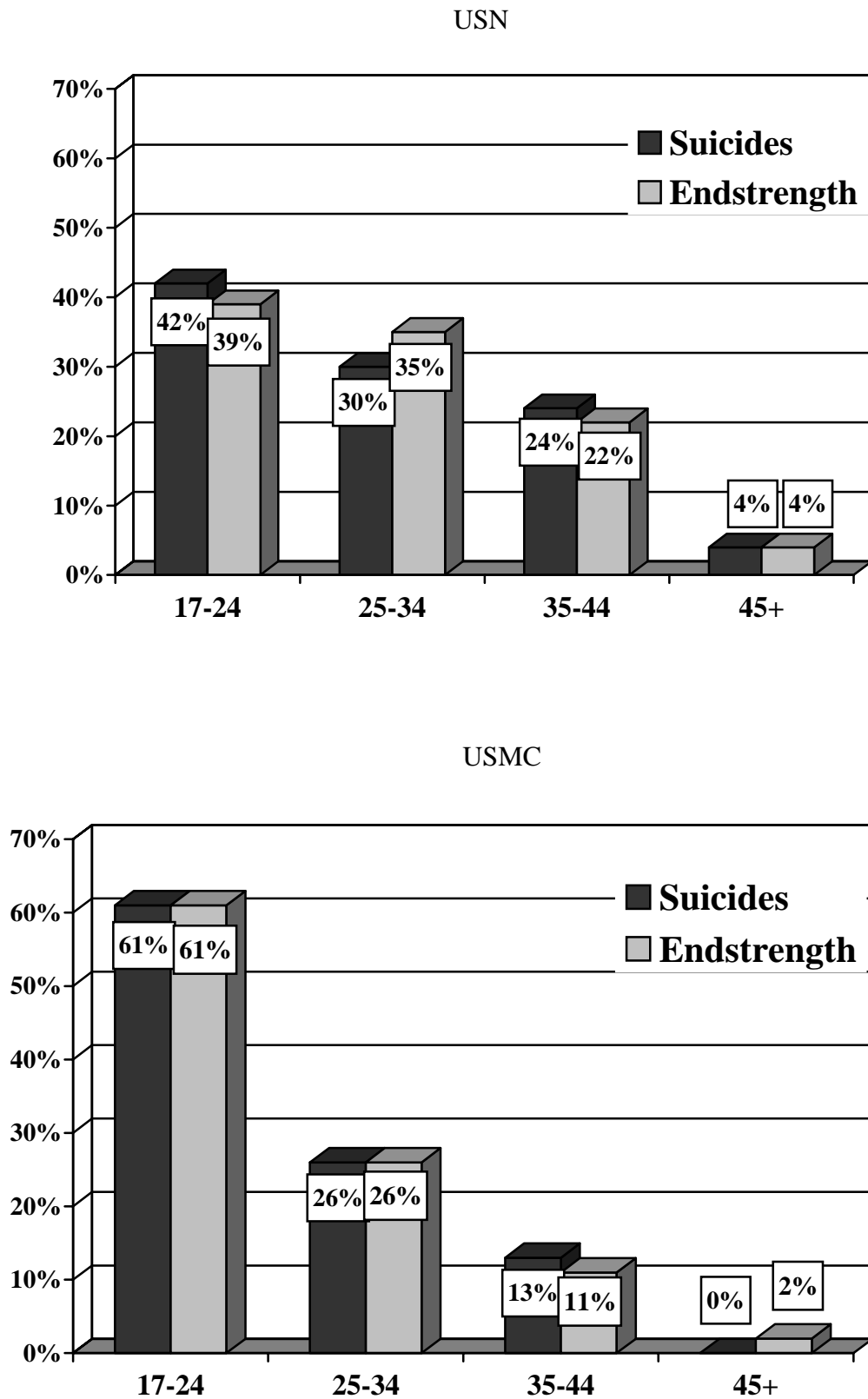
Figure A2. Age in Years of DON Suicide Decedents, 1999–2004

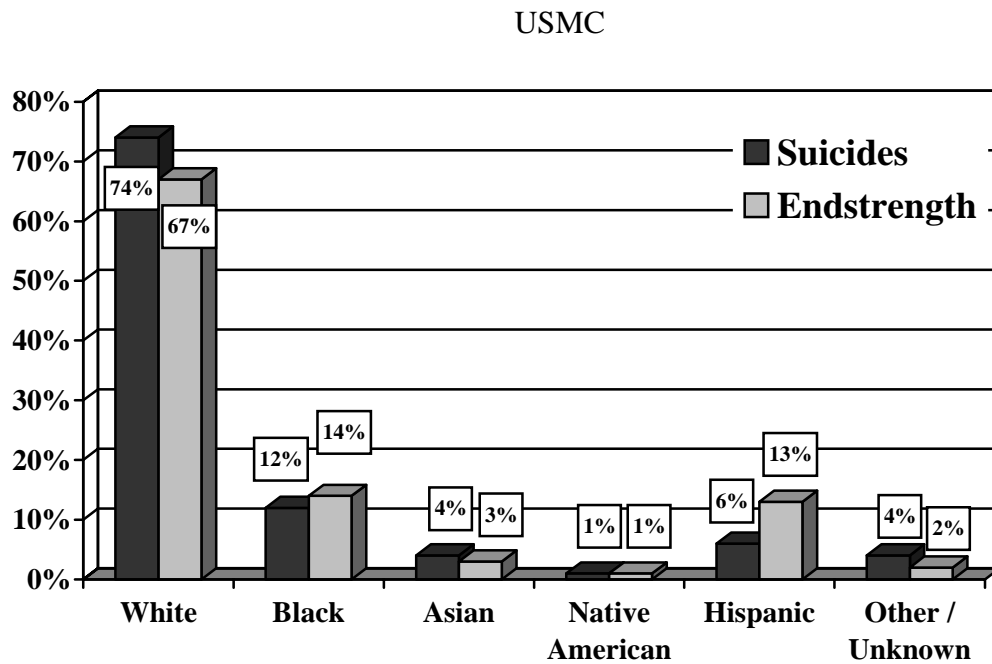
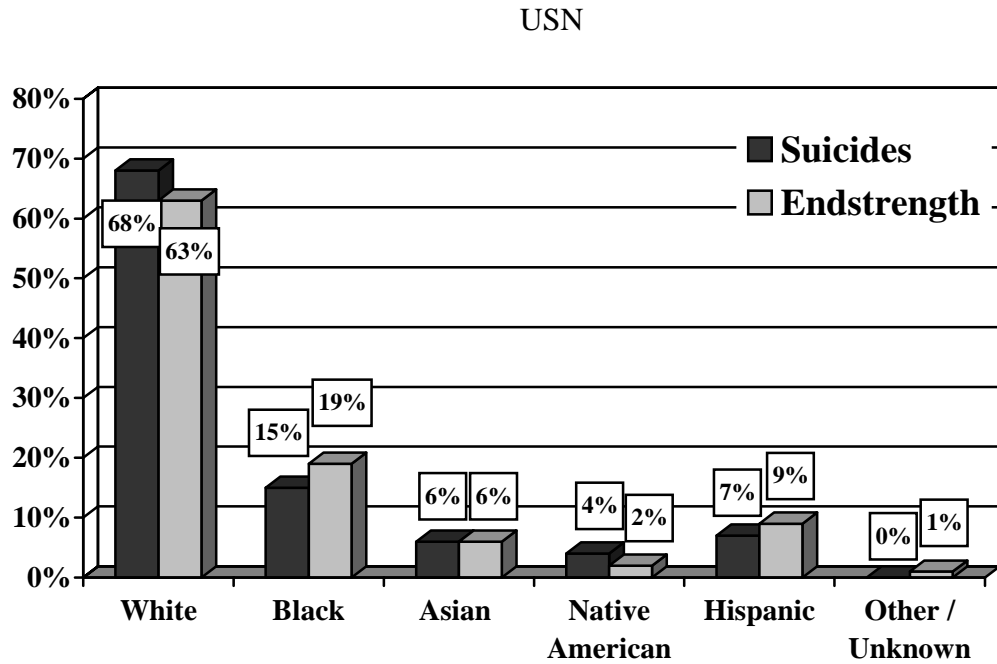
Figure A3. Race of DON Suicide Decedents, 1999–2004

Table A. Standardized Mortality Ratios Comparing U.S. Civilian Population Suicide Rates With USN and USMC Rates

Subpopulation	USN		USMC	
	SMR	99% CI	SMR	99% CI
Overall	0.58	0.49–0.68	0.73	0.59–0.90
Gender				
Male	0.57	0.48–0.68	0.72	0.58–0.88
Female	0.75	0.28–1.60	2.09	0.45–5.91
Age in years				
17–19	1.00	0.56–1.64	0.98	0.54–1.62
20–24	0.61	0.45–0.81	0.69	0.49–0.93
25–34	0.50	0.36–0.66	0.72	0.46–1.05
35–44	0.56	0.39–0.78	0.83	0.45–1.41
45–54	0.60	0.22–1.29	0.00	0.00–1.44
Race/Ethnicity				
White	0.53	0.43–0.64	0.72	0.56–0.91
Black	0.63	0.39–0.95	0.79	0.40–1.39
Asian/Pacific Islander	1.08	0.48–2.07	2.14	0.55–5.60
Native American	0.67	0.25–1.43	0.28	0.00–2.06
Hispanic	0.81	0.39–1.47	0.64	0.24–1.37

Note. Standardized mortality ratios (SMRs) are computed as the ratio of USN or USMC crude rates over U.S. rates standardized for the respective service demographics. CI = confidence interval. Bolded figures indicate significant ratios ($p < .01$), and 1.00 minus the bolded figure indicates the percent the corresponding service rate is below the standardized U.S. rate. All figures are calculated excluding persons of “other” or unknown race from USN and USMC data to enhance category compatibility between service and U.S. data.

Table B. Key Risk Factors Reported on the DONSIR for Suicide Decedents, 1999–2004

Indicator	USN	USMC	DON
Mental Health History			
1. Psychiatric history	30%	32%	31%
2. Alcohol misuse in the last year	31%	16%	25%
3. Suicide attempts or gestures	19%	19%	19%
4. Drug use/abuse in last year ^a	6%	9%	7%
<i>Total mental health history</i>	51%	45%	49%
Recent Emotional State			
5. Depression	39%	39%	39%
6. Anxiety	27%	26%	27%
7. Guilt, shame, remorse	27%	22%	25%
8. Sense of failure	21%	26%	22%
9. A desire to be free of problems	21%	15%	19%
10. A desire to die	18%	20%	19%
11. Hopelessness or uselessness	17%	21%	18%
12. Loneliness	19%	10%	16%
13. Isolation	18%	12%	15%
14. Powerlessness	13%	15%	13%
15. Lack of interest in usual activities	9%	16%	12%
16. Feeling burdensome to others	9%	11%	10%
<i>Total recent emotional state</i>	65%	59%	63%

Table B Cont.

Key Risk Factors Reported on the DONSIR for Suicide Decedents, 1999–2004

Indicator	USN	USMC	DON
Recent Change in Affect or Behavior			
17. Change in usual mood	23%	24%	24%
18. Change in sleep patterns	16%	17%	17%
19. Poorer work performance	11%	12%	11%
20. Change in weight	9%	15%	11%
21. Change in eating patterns	10%	11%	10%
<i>Total recent changes</i>	39%	38%	39%
Self-Destructive or Aggressive Behavior			
22. Arranging affairs	13%	10%	12%
23. Impulsivity	12%	12%	12%
24. Aggressive behavior	7%	10%	8%
25. Self-deprecation	8%	8%	8%
26. Self-mutilation	4%	4%	4%
<i>Total destructive behavior</i>	33%	26%	30%

Note. ^aDrug use includes (a) amphetamines, (b) tranquilizers/depressants, (c) marijuana, (d) cocaine/opiates, (e) inhalants, and (d) designer drugs (ecstasy). Due to missing data, *N*'s vary from 320–378 (USN, 199–233; USMC, 115–145).

Table C. Associated Stressors Reported on the DONSIR for Suicide Decedents, 1999–2004

Stressor	USN	USMC	DON
Relationship Problem			
1. Recent romantic relationship problem	55%	48%	52%
2. Recent death of family/friend	10%	6%	8%
3. Domestic violence/sexual abuse	9%	4%	7%
<i>Total relationship problems</i>	60%	53%	57%
Disciplinary/Legal Problem			
4. Military legal/admin action	28%	34%	30%
5. Discipline/conflict with authority	22%	27%	24%
6. Civil legal difficulties	15%	15%	15%
7. Under criminal investigation	14%	12%	13%
<i>Total disciplinary/legal problems</i>	42%	47%	44%
Work-Related Problem			
8. Other work	26%	36%	30%
9. Job dissatisfaction	29%	29%	29%
10. Job stress	19%	19%	19%
11. Job loss	15%	12%	14%
<i>Total work-related problems</i>	48%	52%	49%
Other			
12. Physical health	34%	34%	34%
13. Financial	17%	15%	16%
14. School	9%	4%	7%
<i>Total other problems</i>	52%	47%	50%

Note. Due to missing data, *N*'s vary (349–378) (USN, *N* = 218–233; USMC, *N* = 131–145).

Table D. Evidence of Service Use Prior to Suicide Reported on the DONSIR for Decedents, 1999–2004

Support Service	USN		USMC	
	1 Year	30 Days	1 Year	30 Days
1. Outpatient, military facility	61%	19%	54%	21%
2. Inpatient, military facility	18%	5%	16%	2%
3. Civilian facility	10%	3%	11%	4%
<i>Total medical service use</i>	64%	22%	60%	24%
4. Mental health counseling	23%	10%	25%	10%
5. Substance abuse counseling	9%	2%	7%	3%
6. Stress management	4%	1%	6%	2%
7. Anger management	3%	0%	4%	0%
<i>Total mental health service use</i>	28%	11%	26%	12%
8. Chaplain service	15%	7%	18%	10%
9. Financial counseling	5%	1%	12%	1%
10. Family advocacy	5%	3%	4%	1%
11. Exceptional family member	5%	2%	4%	1%
<i>Total other service use</i>	24%	13%	25%	10%

Note. Due to missing data, $N = 356$ (USN = 222, USMC = 134).

REPORT DOCUMENTATION PAGE

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14. ABSTRACT (maximum 200 words) The Department of the Navy Suicide Incident Report (DONSIR) collects data on completed suicides in the Navy (USN) and Marine Corps (USMC). In this sixth annual report on the DONSIR, numbers conform to new DoD-wide guidelines regarding what suicide deaths should be included in active duty suicide rates and how those rates should be calculated. Between 1999 and 2004, 414 active-duty personnel within the DON (250 USN and 164 USMC) committed suicide. Most DON decedents were male, and suicide rates were significantly higher among men. The suicide rate was significantly lower for officers than for enlisted DON personnel. Suicide rates did not significantly differ, however, as a function of age, race, length of service, or enlisted paygrade. Suicides generally occurred while the decedent was on liberty and at a private residence. A firearm was the most commonly used method of committing suicide. Although the vast majority of deaths by firearm involved a private weapon, persons who had some military training with or access to a firearm were more likely than those who did not to use a gun to commit suicide. The general findings of this report echo previous annual DONSIR reports, reflecting stable results over time.					
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